

**UNITED STATES DISTRICT COURT
NORTHERN DISTRICT OF CALIFORNIA**

IMPINJ, INC.,
Plaintiff,
vs.
NXP USA, INC.,
Defendant.

CASE NO. 19-cv-03161-YGR

CLAIM CONSTRUCTION ORDER

Re: Dkt. No. 115

Plaintiff Impinj, Inc. brings this patent infringement action against defendant NXP USA, Inc., alleging that NXP infringes, among other patents, U.S. Patent Nos. 8,115,597 (the “’597 Patent”) and 10,002,266 (the “’266 Patent”). Now before the Court are the parties’ claim construction disputes as to the ’597 and ’266 Patents. Having carefully considered the papers submitted, the parties’ arguments presented at the claim construction hearing on March 4, 2022, and the pleadings in this action, and for the reasons below, the Court adopts the constructions set forth herein.

I. BACKGROUND

A. Procedural History

Impinj asserts six patents against NXP for technology relating to integrated circuits (“ICs”) for Radio Frequency Identification (“RFID”). In September 2020, the Court issued a claim construction order construing disputed claim terms in U.S. Patents Nos. 9,495,631 (the “’631 Patent”) and 9,633,302 (the “’302 Patent”). Dkt. No. 102. The parties now brief disputed claim terms in the ’597 and ’266 Patents.

B. The ’597 and ’266 Patents

The ’597 and ’266 Patents are both directed to RFID technology. *See, e.g.*, ’597 Patent at Abstract; ’266 Patent at Abstract. The ’597 Patent relates to coupled synchronous rectifiers for

RFID tag circuits that can generate voltage quickly and efficiently.

Claim 1 of the '597 Patent recites:

1. A power rectifier for a Radio Frequency Identification tag circuit, comprising:

a first antenna input node for receiving a first phase of an alternating RF wireless signal;

a second antenna input node for receiving a second phase of the alternating RF wireless signal which is substantially opposite to the first phase;

a plurality of serially coupled stages, at least one of the stages including

a first synchronous element with a first beginning coupled to receive the second phase and a first ending, the first synchronous element including:

a first transistor having an input terminal at the first beginning, an output terminal, and a gate coupled to receive the first phase; and

a second transistor having an input terminal, an output terminal at the first ending, and a gate coupled to receive the second phase, in which the input terminal of the second transistor is connected to the output terminal of the first transistor at a first intermediate node so as to form a first charge-accumulating path between the first beginning and the first ending, and there is no charge-accumulating path between the first beginning and the first ending other than the first path; and

a second synchronous element with a second beginning to receive a first phase and a second ending, the second synchronous element including:

a third transistor having an input terminal at the second beginning, an output terminal, and a gate coupled to receive the second phase;

a fourth transistor having an input terminal, an output terminal at the second ending, and a gate coupled to receive the first phase, in which the input terminal of the fourth transistor is connected to the output terminal of the third transistor at a second intermediate node so as to form a second charge-accumulating path between the second beginning and the second ending, and there is no charge-accumulating path between the second beginning and the second ending other than the second path; and

in which the second beginning is coupled to the first ending.

1 Claim 12 of the '597 Patent recites:

2 12. The rectifier of claim 1, in which

3 *the first and second intermediate nodes are coupled together, and are*
4 *coupled to ground.*

5 The '266 Patent relates to an RFID integrated circuit that automatically tunes its
6 impedance to a lower frequency clock to optimize power extracted from an RF wave.

7 Claim 6 of the '266 Patent recites:

8 6. A Radio Frequency Identification (RFID) integrated circuit (IC)
9 requiring a minimum clock frequency to operate according to a
10 protocol (MFOP), a sufficient power to tune a variable impedance
(SPTT), and a sufficient power to operate according to the protocol
(SPOI) greater than the SPTT, the IC comprising:

11 *a tuning circuit* configured to tune the *variable impedance*
12 during a tuning phase; and

13 a processor block configured to:

14 in the tuning phase:

15 extract a first power at least equal to the SPTT from an RF
16 wave;

17 cause the tuning circuit to tune the *variable impedance* to
18 increase power extraction from the RF wave; and

19 operate at a first clock frequency less than the MFOP while
20 causing the *tuning circuit* to tune the *variable impedance*,
21 wherein the IC is unable to communicate with an RFID reader
22 according to the protocol while operating at the first clock
23 frequency; and in a protocol phase subsequent to the tuning
24 phase;

25 extract a second power at least equal to the SPOI from the RF
26 wave;

27 operate at a second clock frequency greater than or equal to
28 the MFOP; and

communicate with an RFID reader according to the protocol
while operating at the second clock frequency.

Claim 8 of the '266 Patent recites:

8. The IC of claim 6, wherein the *processor block* is further
configured to:

initially operate in the tuning phase; and

subsequently operate in the *protocol phase*.

Claim 10 of the '266 Patent recites:

10. The IC of claim 6, further comprising:

a first clock oscillator configured to provide the first clock frequency;
and

a second clock oscillator configured to provide the second clock frequency.

II. LEGAL STANDARD

Claim construction is a question of law for the Court. *Markman v. Westview Instruments, Inc.*, 517 U.S. 370, 384 (1996). “The purpose of claim construction is to determine the meaning and scope of the patent claims asserted to be infringed.” *O2 Micro Int’l Ltd. v. Beyond Innovation Tech. Co.*, 521 F.3d 1351, 1360 (Fed. Cir. 2008). “When the parties raise an actual dispute regarding the proper scope of the[] claims, the court, not the jury, must resolve the dispute.” *Id.* However, claim construction need only “resolve the controversy”; it is not “an obligatory exercise in redundancy” where no dispute exists. *Id.* at 1361; *Vivid Techs., Inc. v. Am. Sci & Eng’g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999).

Claim terms are generally given the “ordinary and customary meaning” that they would have to a person of ordinary skill in the art at the time of the invention. *Phillips v. AWH Corp.*, 415 F.3d 1303, 1312-13 (Fed. Cir. 2005) (en banc). The ordinary and customary meaning is not the meaning of the claim term in the abstract. *Id.* at 1321. Rather, it is “the meaning to the ordinary artisan after reading the entire patent.” *Id.*; see also *Trs. of Columbia U. v. Symantec Corp.*, 811 F.3d 1359, 1364 (Fed. Cir. 2016) (“The only meaning that matters in claim construction is the meaning in the context of the patent.”).

To determine the ordinary meaning, the court examines the claims, specification, and prosecution history of the patent, which form the “intrinsic evidence” for claim construction. *Phillips*, 415 F.3d at 1313; *Vitronics Corp. v. Conceptronic, Inc.*, 90 F.3d 1576, 1582 (Fed. Cir. 1996). “[T]he context in which a term is used in the asserted claim can be highly instructive.” *Phillips*, 415 F.3d at 1314. Additionally, “[d]ifferences among claims can also be a useful guide in understanding the meaning of particular claim terms.” *Id.* However, a person of ordinary skill

1 in the art is “deemed to read the claim term not only in the context of the particular claim in which
2 the disputed term appears, but in the context of the entire patent, including the specification.” *Id.*
3 at 1313. The specification “is always highly relevant to the claim construction analysis” and
4 usually “dispositive.” *Id.* at 1315 (quoting *Vitronics*, 90 F.3d at 1582). Nevertheless, it is
5 improper to limit the claimed invention to the preferred embodiments or to import limitations from
6 the specification unless the patentee has demonstrated a clear intent to limit claim scope. *Martek*
7 *Biosciences Corp. v. Nutrinova, Inc.*, 579 F.3d 1363, 1381 (Fed. Cir. 2009).

8 In addition to the claims and specification, the prosecution history may be used “to
9 provide[] evidence of how the PTO and the inventor understood the patent.” *Phillips*, 415 F.3d at
10 1317. “Any explanation, elaboration, or qualification presented by the inventor during patent
11 examination is relevant, for the role of claim construction is to ‘capture the scope of the actual
12 invention’ that is disclosed, described and patented.” *Fenner Inv., Ltd. v. Celco P’ship*, 778 F.3d
13 1320, 1323 (Fed. Cir. 2015). Finally, a court may consider extrinsic evidence—such as
14 dictionaries, inventor testimony, and expert opinion—if it is helpful. *Phillips*, 415 F.3d at 1319.
15 However, extrinsic evidence “is unlikely to result in a reliable interpretation of patent claim scope
16 unless considered in the context of the intrinsic evidence.” *Id.*

17 There are two exceptions to the ordinary meaning construction: “(1) when a patentee sets
18 out a definition and acts as his own lexicographer,” and “(2) when the patentee disavows the full
19 scope of a claim term either in the specification or during prosecution.” *Thorner v. Sony Comp.*
20 *Entm’t Am. LLC*, 669 F.3d 1362, 1365 (Fed. Cir. 2012) (citing *Vitronics*, 90 F.3d at 1580). To act
21 as a lexicographer, the patentee “must ‘clearly set forth a definition of the disputed claim term’
22 other than its plain and ordinary meaning.” *Id.* (quoting *CCS Fitness, Inc. v. Brunswick Corp.*,
23 288 F.3d 1359, 1366 (Fed. Cir. 2002)). To disavow claim scope, the specification or prosecution
24 history must “make[] clear that the invention does not include a particular feature” even though
25 the language of the claims “might be considered broad enough to encompass the feature in
26 question.” *CCS Fitness, Inc.*, 288 F.3d at 1366 (quoting *SciMed Life Sys., Inc. v. Adv.*
27 *Cardiovascular Sys., Inc.*, 242 F.3d 1337, 1341 (Fed. Cir. 2001)).
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III. CLAIM CONSTRUCTION

A. The '597 Patent

Claim Term	Impinj's Proposal	NXP's Proposal	Court Construction
"the first and second intermediate nodes are coupled together, and are coupled to ground"	"Plain and ordinary meaning, no construction necessary"	"coupling of the first and second intermediate nodes via capacitors to ground"	"Plain and ordinary meaning, no construction necessary"

Claim 12 of the '597 Patent recites "the first and second intermediate nodes are coupled together, and are coupled to ground." NXP seeks to limit the term so that the intermediate nodes are coupled to ground through capacitors. NXP bases its proposal on the only embodiment in the '597 Patent showing intermediate nodes coupled to ground, Fig. 9E, where the coupling is done via capacitors. However, the Court may not limit a claim to an embodiment on the sole basis that it is the sole embodiment disclosed in the patent. *See Phillips*, 415 F.3d at 1323 ("In particular, [the Federal Circuit has] expressly rejected the contention that if a patent describes only a single embodiment, the claims of the patent must be construed as being limited to that embodiment." (internal citation omitted)). Reading a limitation into a claim beyond its ordinary meaning is improper absent disavowal or lexicography. *Thorner*, 669 F.3d at 1366-67. Here, there is no disavowal and no intent from the specification to read the limitation "capacitors" into the term.

Accordingly, the Court construes "the first and second intermediate nodes are coupled together, and are coupled to ground" according to its plain and ordinary meaning.

B. The '266 Patent

Claim Term	Impinj's Proposal	NXP's Proposal	Court Construction
"processor block"	"portion of an IC containing RF, analog, and/or digital processing elements" ¹	"portion of the RFID IC that includes a processor"	"Plain and ordinary meaning, no construction necessary"

Claims 6 and 8 of the '266 Patent recites a "processor block." NXP argues that the term recites a portion of the RFID IC including a processor. Impinj argues that it does not. Instead, Impinj contends that a person of ordinary skill in the art would understand the term to mean a

¹ At the hearing, Impinj informed the Court that it would drop its contention that "processor block" could encompass the entire IC, and not merely a portion of the IC.

portion of the RFID IC with RF, analog, and/or digital processing elements.

The '266 Patent specification assigns a broad definition of "processing block":

[A] processing block 444 that receives the output from demodulator 442 and performs operations such as command decoding, memory interfacing, and so on. In addition, processing block 444 may generate an output signal for transmission. *Processing block 444 may be implemented in any way known in the art*, for example by combinations of one or more of a processor, memory, decoder, encoder, and so on.

'266 Patent at 6:60-67 (emphasis added). NXP contends that "processor block" and "processing block" as they appear in the patent are different terms meaning different things. As NXP's argument goes, the patentee chose to use the narrower "processor block" in the claims instead of "processing block," and thus the specification's broad definition of "processing block" does not apply to "processor block." But the Court is unpersuaded that the patentee intended the terms "processor block" and "processing block" to mean different things. Because "processor block" does not appear in the '266 Patent specification, is it more likely that "processing block" and "processor block" mean the same thing. The Court thus sees no reason to limit "processor block" to require a processor and rejects NXP's proposal.

The Court further declines to adopt Impinj's proposed construction of "processor block" as "portion of an IC containing RF, analog, and/or digital processing elements." Impinj simply objects to NXP's proposal and offers its own construction without providing any reasons for adopting it.²

Accordingly, the Court construes "processor block" according to its plain and ordinary meaning.

² Impinj proposed applying the plain and ordinary meaning to the term "processor block" in U.S. Patent No. 10,776,198 (the "'198 Patent") in a separate patent litigation between these two parties. *See Impinj Inc. v. NXP USA, Inc.*, 6:21-cv-00530-ADA, Dkt. No. 56 at 5 (W.D. Tex. Feb. 10, 2022). In that case, Judge Albright adopted Impinj's request over the same proposal NXP makes here. *Id.* Although the '198 Patent and the '266 Patent are not of the same patent family, the specifications of the '198 Patent and '266 Patent contain identical language describing the "processing block" – down to the same element number, 444. *Compare* '266 Patent 6:60-67 with '198 Patent at 5:21-28.

Claim Term	Impinj's Proposal	NXP's Proposal	Court Construction
"configured to"	"plain and ordinary meaning, no construction necessary"	"made or designed to perform a specific function"	"made or designed to"

The parties next propose competing constructions for "configured to." The parties previously disputed "configured to" as part of a term in the last claim construction hearing. Dkt. No. 102 at 10. Impinj argued that "configured to" meant "mere capability" to perform. NXP countered that the term instead meant that the proceeding function "must actually" occur. The Court agreed with Impinj, finding that the term "generally does not require the 'configured to' function to actually be performed."³ *Id.* (construing "is *configured to* protect the covered repassivation layer during etching" as "is *made to* protect the covered repassivation layer during etching").

This time, the parties contest the meaning of "configured to" alone, without any additional phrases. NXP argues that "configured to" should mean "made or designed to perform a specific function." Impinj challenges this proposal as improperly importing an intent element into the claims. Instead, according to Impinj, the Court should construe "configured to" according to its plain and ordinary meaning.

As the Court mentioned in its prior claim construction order, the Federal Circuit has held that "configured to" is generally given definitions ranging from broad ("capable of" or "suitable for") to narrow ("made to," "designed to," or "adapted to"). *See* Dkt. No. 102 at 10 (quoting *Aspex Eyewear, Inc. v. Marchon Eyewear, Inc.*, 672 F.3d 1335, 1349 (Fed. Cir. 2012)). Whether "configured to" receives a broad or a narrow definition depends on the way the phrase is used in the patent. Here, the context of "configured to" as it appears in the '266 Patent implies that the term should be given a narrower definition, like "made to" or "designed to." Claims 6 and 8 refer to an integral circuit processor block "configured to" perform certain functions in tuning and protocol phases. This implies that the processor block is made to accomplish the specified

³ The construction listed on page 11 of the Court's previous claim construction order was made in error. *See* Dkt. No. 102 at 11. The construction listed on page 10 is the correct version of the Court's construction of the term "is configured to protect the covered repassivation layer during etching." *Id.* at 10.

objective, not simply that it can be made to perform those functions. *See id.*

NXP's proposal comes close to capturing this definition, but its final clause "to perform a specific function" is unnecessary and unsupported by the context of the claim as the specified function is in the claim language itself. The Court thus adopts NXP's proposal but without the clause "to perform a specific function."

Accordingly, the Court construes "configured to" as "made or designed to."

Claim Term	Impinj's Proposal	NXP's Proposal	Court Construction
"protocol phase"	"period during which a tag is capable of receiving and responding to reader commands"	"period during which the RFID IC receives and responds to reader commands according to a protocol"	"period during which the RFID IC is capable of receiving and responding to reader commands"

The parties dispute whether "protocol phase" in claims 6, 8, and 10 should be construed: (1) to include an RFID tag; (2) as the period during which the IC can or must receive and respond to reader commands; and (3) to require activity "according to a protocol."

The Court addresses the first dispute. A side-by-side comparison of claims 1 and 6 in the '266 Patent confirms the patentee chose to omit a tag in claim 6. While both claims include "protocol phase," only one claim, claim 1, claims the RFID tag. Claim 6, for which the parties seek to construe "protocol phase," does not claim a tag. It only claims the integrated circuit. The Court thus concludes that "protocol phase" does not include an RFID tag.

The Court next addresses whether "protocol phase" is the period during which an RFID IC can or must receive and respond to reader commands. Impinj argues for capability. NXP challenges this proposal, contending that "protocol phase" should mean that it is the period during which the RFID IC receives and responds to reader commands. In support, NXP cites the language of the '266 Patent's specification, which twice refers to "protocol phase." *See* '266 Patent at 14:44-47 ("For example, the tag IC may increase its clock frequency to be greater than or equal to the MFOP in order to operate in a protocol phase, in which it receives and responds to reader commands according to a protocol"); *id.* at 17:51-56 ("[T]he IC may . . . enter a protocol phase in which it receives and responds to reader commands according to a protocol"). As Impinj

points out, and the Court agrees, each description of “protocol phase” in the specification uses the permissive verb “may,” which indicates capability and not a requirement. The Court thus concludes that “protocol phase” is the period during which an RFID IC can receive and respond to reader commands.

Finally, the parties dispute whether “protocol phase” requires activity “according to a protocol.” This limitation is unnecessary because claim 6 already states that the RFID IC with a processor block is configured to, during a protocol phase, “communicate with an RFID reader according to the protocol.” ’266 Patent at 22:1-3.

Accordingly, the Court construes “protocol phase” to mean “period during which the RFID IC is capable of receiving and responding to reader commands.”

Claim Term	Impinj’s Proposal	NXP’s Proposal	Court Construction
“tuning circuit”	“circuit element(s) used for tuning”	“circuit that tunes the impedance matching between the RFID IC and a tag antenna”	“Plain and ordinary meaning, no construction necessary.”

NXP next seeks to limit “tuning circuit” to a single embodiment disclosed in the patent – tuning impedance matching between an RFID IC and a tag antenna. However, NXP does not identify the prerequisite lexicography or disavowal that supports departing from the term’s original meaning. *Thorner*, 669 F.3d at 1366-67. The Court thus rejects NXP’s proposal. The Court further declines to adopt Impinj’s proposed construction of “tuning circuit” as “circuit element(s) used for tuning.” Impinj has not shown how this term differs from the plain and ordinary meaning. Instead, it creates more ambiguity.

Accordingly, the Court construes “tuning circuit” according to its plain and ordinary meaning.

Claim Term	Impinj’s Proposal	NXP’s Proposal	Court Construction
“variable impedance”	“an element or group of elements that is capable of providing multiple impedance values”	“Plain and ordinary meaning, no construction necessary.”	“Plain and ordinary meaning, no construction necessary.”

Finally, Impinj argues that “variable impedance” should be defined as “an element or

group of elements that is capable of providing multiple impedance values.” This proposal is only partially supported by the ’266 Patent.

The Court starts with the element supported by the ’266 Patent. The specification makes clear that variable impedance can be implemented as a single element or a group of multiple elements. *Id.* at 9:56-67 (“Tuning element 622 [example of variable impedance] may be implemented as a continuously variable element (e.g., a resistor, capacitor, or inductor) or as one or more switched elements (e.g., resistors, capacitors, and/or inductors).”). NXP does not contest this point.

However, as NXP notes, and Impinj does not dispute, a person of ordinary skill in the art would understand a variable impedance to be an impedance that can be changed. Dkt. No. 117-2 (van der Weide Decl. ¶ 28). Impinj’s construction of “variable impedance” as “capable of providing multiple impedance values” does not capture this variable characteristic but focuses on something different – the number of the values provided. This is a characteristic unsupported in the patent.

Accordingly, the Court concludes that this term does not require construction. The Court thus construes “variable impedance” according to its plain and ordinary meaning.

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IV. CONCLUSION

For the reasons set forth above, the Court adopts the following constructions:

Claim Term	Court Construction
“the first and second intermediate nodes are coupled together, and are coupled to ground”	“Plain and ordinary meaning, no construction necessary”
“processor block”	“Plain and ordinary meaning, no construction necessary”
“configured to”	“made or designed to”
“protocol phase”	“period during which the RFID IC is capable of receiving and responding to reader commands”
“tuning circuit”	“Plain and ordinary meaning, no construction necessary.”
“variable impedance”	“Plain and ordinary meaning, no construction necessary.”

IT IS SO ORDERED.

Dated: March 21, 2022


 YVONNE GONZALEZ ROGERS
 UNITED STATES DISTRICT COURT JUDGE